State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #_____
HRI #_____
Trinomial_____
NRHP Status Code_____
Other Listings_____
Review Code_____ Reviewer_____ Date_____

 Resource name(s) or number(assigned by recorder) N-209

P1. Other Identifier: Pressurized Ballistics Range
***P2. Location:** ☒Not for Publication ☐Unrestricted ***a. County** Santa Clara
***b. USGS 7.5' Quad** Mountain View, Calif. **Date:** 1995
***c. Address** 650 Mark Avenue **City** Moffett Field **Zip** 94035
***e. Other Locational Data:**

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries.)
Building N-209 is a small 1½-story concrete building that is composed of a small one-story office/laboratory portion, a 1½-story warehouse portion, and a long ballistic tank in the rear. The warehouse and office portions feature scored concrete lines along their façades, as well as concrete bands and concrete water tables. On the east façade of the warehouse portion is a steel overhead door with a small steel staircase, overhead lighting, and an I-beam extension. The east façade of the office portion features a glazed, two-panel wood door and a pair of aluminum awning windows. At the rear of the building is a long steel tank, which is covered by a corrugated metal canopy. To the northwest of the building is a concrete platform and a staircase, which leads to an underground facility.

This building is similar to the adjacent Building N-208, which is located underground. According to prior evaluations, Buildings N-208 and N-209 were both constructed as supersonic free-flight tunnels, which were designed to address the problem of firing winged models from a gun with a cylindrical barrel. The building size is approximately 1,740 sq. ft. and appears to be in fair condition. This building has been officially classified by NASA as an abandoned structure.

***P3b. Resource Attributes:** (list attributes and codes) HP39 – Other: Research and Development Facility

***P4. Resources Present:** ☒Building ☐Structure ☐Object ☐Site ☐District ☐Element of District ☐Other

P5a. Photo

P5b. Photo: (view and date)
View of east and north façades (10/02/07)

***P6. Date Constructed/Age and Sources:** 1957

***P7. Owner and Address:**
United States of America as represented by National Aeronautics and Space Administration (NASA)

***P8. Recorded by:**
Page & Turnbull, Inc.
724 Pine Street
San Francisco, CA 94108

***P9. Date Recorded:** 10/19/07

***P10. Survey Type:**
Reconnaissance

***P11. Report Citation:** Architectural Resources Group, *Building Evaluations, NASA Ames Research Center* (July 27, 2001) 13.

***Attachments:** ☐None ☐Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record
☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (list)

View of test section of ballistics range looking east.
Source: Page & Turnbull, 10/02/07

BUILDING, STRUCTURE, AND OBJECT RECORD

***Resource Name or #** N-209

B1. Historic name: Supersonic Free-Flight Pressurized Range; Pressurized Ballistics Range
B2. Common name: Pressurized Wind Tunnel or Ballistics Range Building
B3. Original Use: Pressurized Range B4. Present use: Vacant
***B5. Architectural Style:** Moderne with 20th-Century Industrial influences
***B6. Construction History:** (Construction date, alterations, and date of alterations)
1957 – Date of Construction

***B7. Moved?** ☒**No** ☐**Yes** ☐**Unknown** **Date:**_____ **Original Location:**_____
***B8. Related Features:**
Significant architectural features include concrete exterior, interior layout, and the 10-ft diameter metal testing chamber.

B9a. Architect: National Advisory Committee for Aeromautics (NACA) Engineers b. Builder:
***B10. Significance: Theme** Post-War Science and Space Exploration **Area** NASA Ames Research Center
Period of Significance 1955 – 1957 **Property Type** Research Facility **Applicable Criteria** 1
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity)
Originally used as the Pressurized Ballistics Range, Building N-209 is similar to its underground neighbor, Buildng N-208. Built as part of the Supersonic Free-Flight Pressurized Range, this building is comprised of a series of interconnected concrete rooms and a long, 10-foot diameter testing chamber. This building addressed the problems of firing winged models from a gun with a cylindrical barrel. After launching the winged models inside the wind tunnel, the model's flight path was recorded on a shadowgraph, thus revealing the intricacies of hypersonic airflow around the model. These tests were crucial to the understanding of NASA re-entry vehicles that entered the atmosphere from outer space. Building N-209 contributed to the study of aeronautical science, early space exploration, and the understanding of aeronautic flight paths. The building retains a integrity with integrity of location, design, setting, materials, and feeling. However, the building does not retain integrity of workmanship and association, due to the removal of the scientific equipment and the building's current lack of use. These two aspects are essential in conveying the building's historic significance. The building is vacant and has been mothballed. Although significant research was conducted at N-209, it does not meet Natioanl Register or California Register eligibility criteria since it lacks integrity. Attached is information regarding the building's technical capacities.

B11. Additional Resource Attributes: (List attributes and codes) (HP39) – Research and Development Facility

***B12. References:**

- Architectural Resources Group, *Building Evaluations, NASA Ames Research Center, Moffett Field, California* (July 27, 2001)
- Edwin Hartman, *Adventures in Research: A History of Ames Research Center, 1940 – 1965* (NASA SP-4302, 1970).
- Elizabeth A. Muenger, *Searching the Horizon: A History of Ames Research Center, 1940 – 1976* (NASA SP-4304, 1985).
- Glenn Bugos, *Atmosphere of Freedom: Sixty Years at the NASA Ames Research Center* (NASA SP-4314, 2000).
- Donald Baels and William R. Corliss, *The Wind Tunnels of NASA* (NASA SP-440, 1981)
- National Aeronautics and Space Administration, *Technical Facilities Catalog*, Volume 1, publication NHB 8800.5A (1), October 1974.
- Technical Information Division, Ames Research Center, *Ames Research Facilities Summary,* 1974.
- Donald D. Baals and William R. Corliss, *Wind Tunnels of NASA,* NASA SP-440, 1981.

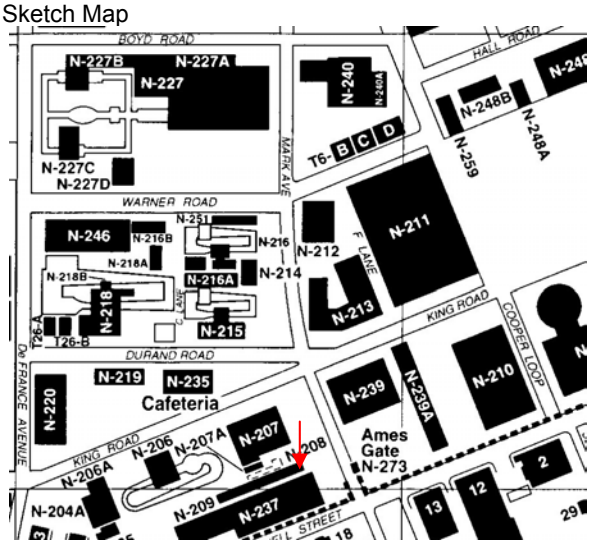
B13. Remarks: In 2005, Page & Turnbull surveyed all properties located at NASA Ames Research Center.

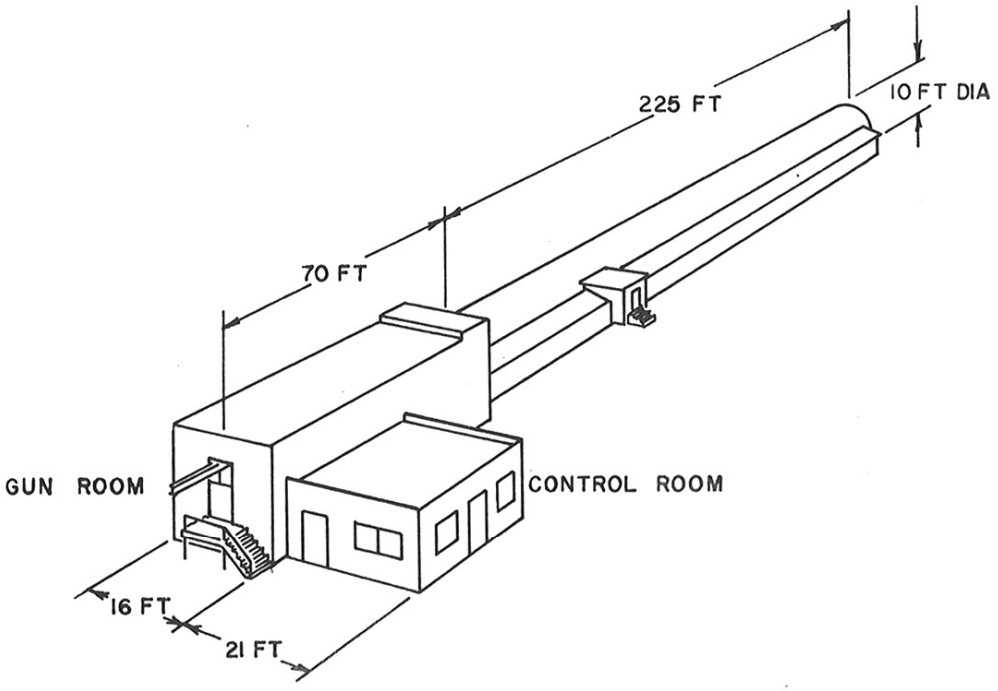
***B14. Evaluator:** Rich Sucre
Page & Turnbull, Inc.
724 Pine Street
San Francisco, CA 94108

***Date of Evaluation:** 10/19/2007

(This space reserved for official comments.)

Sketch Map

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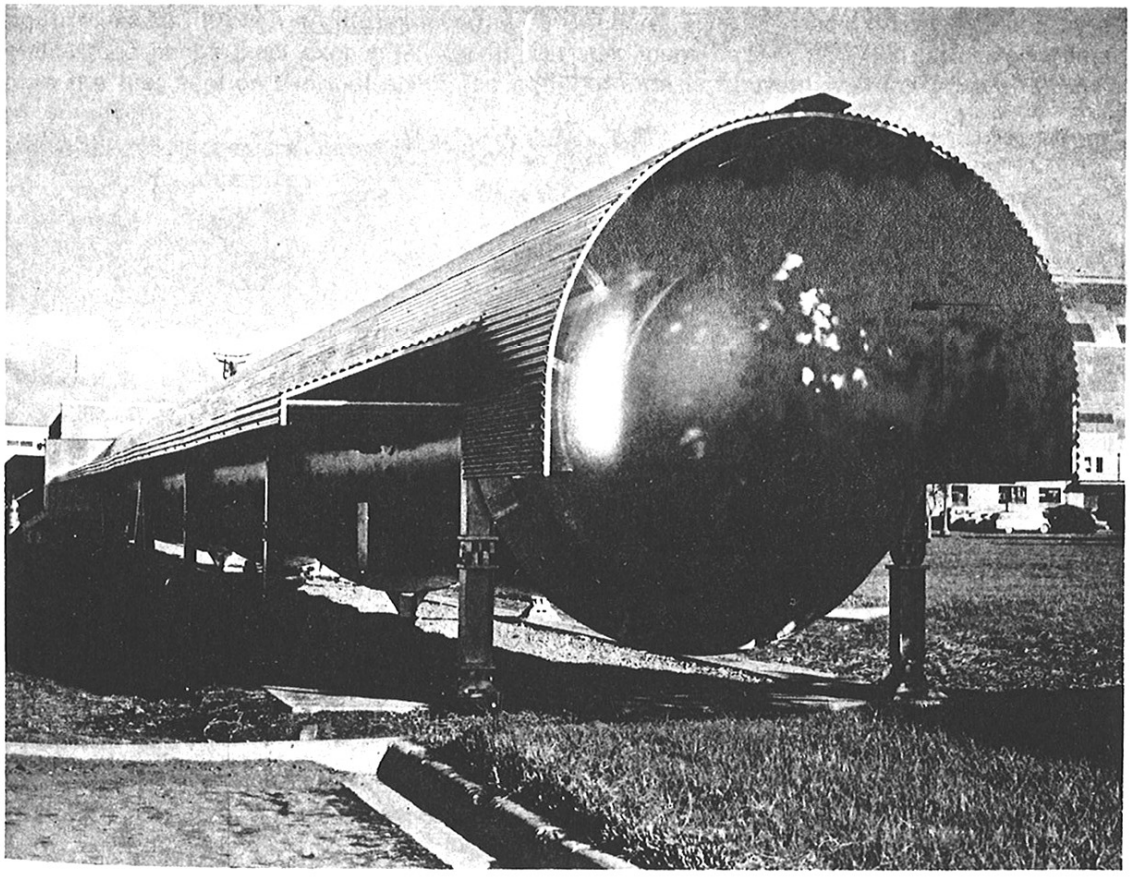
70 FT
GUN ROOM
CONTROL ROOM
16 FT
21 FT



DESCRIPTION

The Pressurized Ballistic Range is used to measure the aerodynamic characteristics of bodies and wing-body combinations in quiescent air at speeds below 11,000 ft/sec (even at low subsonic speeds) and at Reynolds numbers large enough to approach those of full-scale flight. The flights are recorded by a 24-station, conical-projection, shadowgraph system; conventional numerical analysis of the time-distance-attitude records is used. The range test region is spacious enough to accommodate diverse special equipment such as cameras, long troughs for catching aerodynamically decelerated plastic models with minimum damage, and calorimeters for measuring the total heat input into similarly decelerated metal models.

CHARACTERISTICS

Model Speed, ft/sec:	11,000
km/sec:	3.3
Max. Model Diameter, mm:	57
Max. Model Weight, gm:	170
Max. Model Launching Acceleration, g:	10^6
Max. Air Pressure, atm:	5
Min. Air Pressure, atm:	0.01
Air Temperature, °F:	75
Max. Reynolds Number, per ft:	300×10^6
Test-Section Length, ft:	203
Pressure Vessel Diameter, ft:	10
Test-Section Diameter, ft:	1.5 to 5
Shadowgraph Stations, number:	24
Shadowgraph Station Spacing, ft:	7 to 14
Test Gas:	Air